Topic: Inverse functions

Question: This is a graph of a function and its inverse. The graphs belong to which pair of functions?

Answer choices:

A $f(x) = x^3$ $g(x) = -\sqrt[3]{x}$

B $f(x) = x^3$ $g(x) = \sqrt[3]{x}$

C $f(x) = -x^3$ $g(x) = -\sqrt[3]{x}$

D $f(x) = -x^3$ $g(x) = \sqrt[3]{x}$

© Krista King Math

Solution: B

The point $(1,1)$ is common to both graphs, so let's input 1 into each function and see if it returns 1 for each function in the pair.

A	$f(1) = 1^3 = 1$	$g(1) = -\sqrt[3]{1} = -1$
B	$f(1) = 1^3 = 1$	$g(1) = \sqrt[3]{1} = 1$
C	$f(1) = -1^3 = -1$	$g(1) = -\sqrt[3]{1} = -1$
D	$f(1) = -1^3 = -1$	$g(1) = \sqrt[3]{1} = 1$

Look at answer choice B. Evaluating $f(1)$ returns a value of 1. Likewise, evaluating $g(1)$ also returns a value of 1. This tells us that $(1,1)$ is a point of the graphs of both $f(x)$ and $g(x)$ as they're defined in answer choice B.

© Krista King Math

Topic: Inverse functions

Question: Which of these functions is the inverse of the given function?

$$f(x) = \frac{1}{x} - 2$$

Answer choices:

A $f^{-1}(x) = 2 - \frac{1}{x}$

B $f^{-1}(x) = \frac{x+1}{2}$

C $f^{-1}(x) = \frac{1}{x+2}$

D $f^{-1}(x) = \frac{x}{2} + 1$

© Krista King Math

Solution: C

To find the inverse of

$$f(x) = \frac{1}{x} - 2$$

first solve for x.

$$y = \frac{1}{x} - 2$$

$$y + 2 = \frac{1}{x}$$

$$x(y + 2) = 1$$

$$x = \frac{1}{y + 2}$$

To get the inverse, exchange x and y above, resulting in

$$y = \frac{1}{x + 2}$$

$$f^{-1}(x) = \frac{1}{x + 2}$$

© Krista King Math